

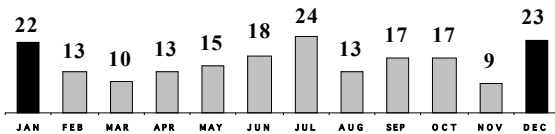
# PLEASE POST IMMEDIATELY

## Work Safely this Winter...Implement SOFA Advisories and Lifesavers

### RISK IN WINTER MONTHS

Since 1992, 45 switching Fatalities occurred in December and January

194 Switching Fatalities, by month, January 1, 1992 through December 05, 2012



Winter months bring risk...work safely!

**A Message from SOFA:  
Work Safely this Winter**  
*page 4*

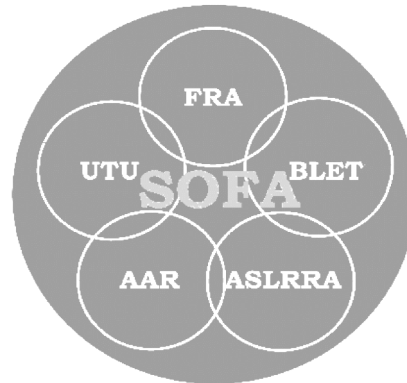
### 7 SOFA Safety Discussion Items

Consider discussing when switching safety is addressed: safety briefings, meetings...even informal conversations

**Discussion item:** Winter risk. What can be done to reduce it when switching? Weather and extended darkness play a role.

*more discussion items, page 13*

**SOFA Education Section**  
Some Fatality Cases Related to Winter Risk  
*pages 18-21*



**SOFA** is a voluntary, non-regulatory, railroad-safety partnership comprised of representatives from AAR, ASLRRR, BLET, FRA, and UTU  
**SOFA** seeks to prevent switching Fatalities through education based on facts about causes. SWG is not part of a rulemaking or regulatory process  
**SOFA** recognizes that all have responsibility for switching safety: employees, managers, and regulators  
**SOFA's** vision is Zero Switching Fatalities achieved through education and non-punitive interactions among stakeholders

**3 Switching Fatalities in 2012**  
through December 05

**Jan 30.....Gary, IN**  
**May 28.....Kenmare, ND**  
**July 31.....Mason City, IA**  
*preliminary summaries, page 2*

### **Decline in Switching Fatalities**

- 3 Fatalities in 2012 through December 05, compared to 4 Fatalities in 2011 for the same approximate eleven-month period
- The 4 Fatalities in 2011 were historically the lowest count at least back to 1975. Previous low counts were 6 in 2007 and 2002  
*page 8*

### **Decline in SOFA-defined Severe Injuries**

- 38 Severe Injuries in January-September 2012, compared to 51 in the first nine months of 2011
- 3 Amputation in January-September 2012, compared to 8 in the first nine months of 2011  
*pages 14-17*

**Why SOFA places so much emphasis on  
Advisories and Lifesavers**  
*page 5*

## Switching Fatality and Severe Injury Update – 2012 Fourth Quarter

# Three Switching Fatalities in 2012 through December 05

Preliminary summaries, not based on investigation

## 1) January 30 – GRW – Gary, IN

About 6 pm, a three person switching crew (conventional – not RCL) was making a move in an industry with a cut of cars and using two tracks (#2 & 2.5). They shoved 19 East into TK2. The “helper” trainman was watching the cut – protecting the move from the east end. A cut was made and the engine, a slug unit and 4 cars came west out of TK 2 to clear. The switch was then lined for TK 2.5 by the foreman, he mounted the North side of the move (nearest the cars on TK2) and began to shove east down TK2.5. The foreman was killed when his shove came into contact with the cut left on the West end of TK2 – where it merges with TK2.5. Foreman was in his late 50’s and had 10 or so years of seniority. Crew was familiar with the industry site, and had been there the night before making a similar move.

Comment based on preliminary information: Shoving was the direction of movement. Shoving involves special challenges to employees engaged in switching, especially less experienced employees (although apparently not a factor in this case).

## 2) May 28 – CP – Kenmare, ND

A conductor and engineer of a westward CP Rwy train were in the process of setting off 27 cars into track 2 of a small yard at 2:05 a.m. local time. They had left the remainder of their train on the main track near the west end of the yard. After appropriate switches were lined, and as the conductor – who was riding the point of the leading car – began moving into track 2, he was struck and killed by cars out to foul on track 1. It is reported that the conductor had about 7 years of service with almost 6 as a MOW employee. The move was estimated to be moving at approximately 4 mph. This location is about 52 miles NW of Minot, ND.

Comment based on preliminary information: Appears related in part to SOFA Advisory 2 (close/no clearance): a temporary close clearance, cars left afoul.

## 3) July 31 – UP – Mason City, IA

A 35 year-old conductor on a conventional switching crew was crushed when two cars he had kicked into a flat switching track rolled back out and into him while he was preparing the next cut of cars to be kicked.

Comment based on preliminary information: Appears related in part to SOFA Recommendation/Lifesaver 1 (going between rolling equipment): cars rolled back after joint was assumed to be made, or cars were not made secure.

**Work Safely this Winter...Implement SOFA Advisories and Lifesavers**

# Review Information based on the three 2012 Fatalities

## **Shoving: involved in January 30, Gary, IN, Fatality**

- Based on 179 Fatalities: For cases involving train movement, 57 percent had shoving as the direction of movement. Seventy-seven (77) percent of industrial location Fatalities involved shoving. This is not to say that inappropriate shoving procedures were a cause, or even a contributing factor, of each Fatality. Clearly, this is not true. There are many reasons why Fatalities occur. But shoving is very prevalent in switching operations. Performing shove moves safely has importance.
- Based on possible contributing factors (PCFs) for 179 Fatalities: 24 cases involved ‘Shoving movement, man on or at leading end of movement, failure to control (H307)’; 8 cases involved ‘Shoving movement, absence of man on or at leading end of movement (H306)’; 2 cases involved ‘Car(s) shoved out and left out of clear (H301)’; and 1 case involved ‘Failure to stretch cars before shoving (H309)’. To summarize, in the 175 cases involving train movement, 20 percent involved shoving as a PCF.
- “Wherever feasible, efforts should be made to avoid shove movements especially where light engines are involved. Greater use of procedures such as running around cars and changing ends should be utilized.” From *2004 SOFA Report, section 4.5, page 54*. Also cited in the *2011 SOFA Report, section 1.2.6.3, page 5*.
- SOFA Advisory 3 deals with industrial hazards. Relevant to shoving, this Advisory states: “Employees engaged in switching operations must not ride railroad equipment through a grade crossing during a shove movement.” From *2011 SOFA Report, section 3.6.5, page 37*.
- Inexperience employees may find shove moves particularly challenging.

## **SOFA Advisory 2 (close/no clearance: temporary): involved in May 28, Kenmare, ND, Fatality**

*Definition of a temporary close/no clearance:* A movable object, including equipment on or near one track fouling another track, rolling stock on an adjacent track, stacks of cross ties, construction materials, and doors or gates left open, that passes by an employee or an employee passes. Report close/no clearances through established procedures. Use a job briefing to discuss close/no clearances, both permanent and temporary. When switching, be aware of the situation and surroundings. [material taken from the *2011 SOFA Report*] Importantly, it is not just the close clearance, but having knowledge of it, and acting accordingly.

## **SOFA Lifesaver/Recommendation 1 (going between rolling equipment): involved in July 31, Mason City, IA, Fatality**

*Recommendation 1:* Any crew member intending to foul track or equipment must notify the locomotive engineer before such action can take place. The locomotive engineer must then apply locomotive or train brakes, have the reverser centered, and then confirm this action with the individual on the ground. Additionally, any crew member that intends to adjust knuckles/drawbars, or apply or remove EOT device, must insure that the cut of cars to be coupled into is separated by no less than 50 feet. Also, the person on the ground must physically inspect the cut of cars not attached to the locomotive to insure that they are completely stopped and, if necessary, a sufficient number of hand brakes must be applied to insure the cut of cars will not move. *Lifesaver 1:* Secure equipment before action is taken.

*Discussion 1:* This recommendation emphasizes the importance of securing the equipment. A thorough understanding by all crew members that the area between cars is a hazardous location, whether equipment is moving or standing, is imperative. [see SOFA Reports for additional information on Lifesavers/Recommendations] Also addressed by *Federal Railroad Administration’s Safety Advisory 2011-02*.

# **A Message from SOFA: Work Safely this Winter**

**As winter approaches, it is important to recognize what history teaches: the incidence of switching fatalities and severe injuries to train and engine employees increases in much of the country. Enough so that special emphasis to reduce winter risk warrants consideration. Clearly, weather and extended darkness play a role. There may be other factors as well.**

**Such special emphasis should include recognition of any local conditions that change during winter – in yards, out on the mainline, and at industrial switching sites. Relevant company policies and SOFA Advisories and Lifesavers\* should also be considered. And any other factors specific to your duties and railroad.**

**While casualty has declined in 2012, it is historically true that casualty increases during winter. It need not be so. Risk can be recognized and remedied.**

**Always remember, safety is not just the responsibility of those who switch – but all who in any way influence safety. Get the word out: winter brings additional risk to those engaged in switching. Consider placing special emphasis on winter risks.                   - The SOFA Working Group**

**\* SOFA Advisories and Lifesavers are based on reasons why past fatalities occurred and how future fatalities can be prevented**

## **Why SOFA places so much emphasis on the Advisories and Lifesavers/Recommendations ...even to the point of being repetitious**

- **SOFA reports, updates, and discussions stress the need to apply the Five Advisories and the Five Lifesavers/Recommendations when appropriate in switching operations.**
- **Advisories and Five Lifesavers/Recommendations are based on the reasons why switching Fatalities occur – and can be prevented. Note all reasons, but important ones. Other safety considerations are involved. Company procedures and local conditions are important to prevention.**
- **Applying Advisories and Lifesavers when appropriate in switching operations reduces risk. And will help the industry achieve the Zero Switching Fatality Goal. Many recent Fatalities involve Advisories and Lifesavers (next page). Clearly, switching Fatalities are not just chance occurrences or random acts of nature. Reasons why Fatalities occurred are understood. Many of these reasons are contained in the Advisories and Lifesavers. Importantly, the Advisories and Lifesavers can prevent future Fatalities.**
- **As humans we sometimes forget that risk is always present. Or it is tempting to omit an important safety step. So reminders – even to the point of being repetitious – are useful in making switching safe.**
- **SOFA stresses that these reminders about the Advisories and Lifesavers/Recommendations should occur in a positive, educational, and reinforcing manner.**
- **Historically, switching Fatalities increase in winter months. Now is a good time to remind all of the Advisories and Lifesavers. And of any company policies and local conditions that impact winter safety.**
- **Safety is not just the responsibility of those who switch – but all who in any way influence safety. Get the word out: Advisories and Lifesavers reduce switching risk.**

## SOFA Advisories and Lifesavers/Recommendations: Involvement in the 15 Most Recent Switching Fatalities

- SOFA Advisories and Lifesavers/Recommendations played a major role in the most recent 15 switching Fatalities (over approximately the last three years: January 1, 2010, through December 05, 2012)
- As presently classified, 13 of the 15 Fatalities involve an Advisory or Lifesaver/Recommendation (Note: The classification could change based on review of cases marked ‘preliminary’)
- Advisories and Lifesavers/Recommendations are based on reasons why switching Fatalities occur...and how Fatalities can be prevented
- Applying SOFA Advisories and Lifesavers/Recommendations when appropriate can reduce risk...as well as identifying all other hazards affecting risk in switching operations

Year	Count	Date	Days between Fatalities	City	State	Information: Reviewed or Preliminary?	<u>Brief Description</u> (Risks other than those listed are often involved. Classification of cases marked ‘preliminary’ in the previous column is subject to revision. )
<b>2010</b>	1	04/23/10	--	Riverdale	IL	reviewed	Struck by moving locomotive; and lack of, or inadequate job briefing ( <b>Advisory 4</b> )
	2	05/31/10	38	Kearny	NJ	reviewed	Close clearance ( <b>Advisory 2</b> ) in a well lighted and well marked fueling facility
	3	06/10/10	10	Doswell	VA	reviewed	Struck by mainline train ( <b>Advisory 5</b> ); and drugs
	4	07/01/10	21	Meridian	MS	reviewed	Slipping, tripping, or falling
	5	07/13/10	12	East Deerfield	MA	reviewed	Going between rolling equipment ( <b>Lifesaver/Recommendation 1</b> )
	6	09/02/10	51	Bridgeport	NJ	reviewed	Temporary close clearance ( <b>Advisory 2</b> ), cars left afoul
	7	09/04/10	2	Mobile	AL	reviewed	Industrial hazard ( <b>Advisory 3</b> ), a rotary coal dumper
	8	10/11/10	37	Orange	TX	reviewed	Inexperience ( <b>Advisory 1</b> ); and slipping, tripping, or falling
<b>2011</b>	9	02/08/11	--	Kankakee	IL	preliminary	Temporary close clearance ( <b>Advisory 2</b> ), cars left afoul
	10	07/25/11	167	Bedford Park	IL	preliminary	Going between rolling equipment ( <b>Lifesaver/Recommendation 1</b> )
	11	08/15/11	21	Kansas City	KS	preliminary	Going between rolling equipment ( <b>Lifesaver/Recommendation 1</b> )
	12	09/08/11	24	Botkins	OH	preliminary	Going between rolling equipment ( <b>Lifesaver/Recommendation 1</b> )
<b>2012</b> through Dec 05	13	01/30/12	--	Gary	IN	preliminary	Shoving was direction of movement
	14	05/28/12	119	Kenmare	ND	preliminary	Temporary close clearance ( <b>Advisory 2</b> ), cars left afoul
	15	07/31/12	64	Mason City	IA	preliminary	Going between rolling equipment ( <b>Lifesaver/Recommendation 1</b> )

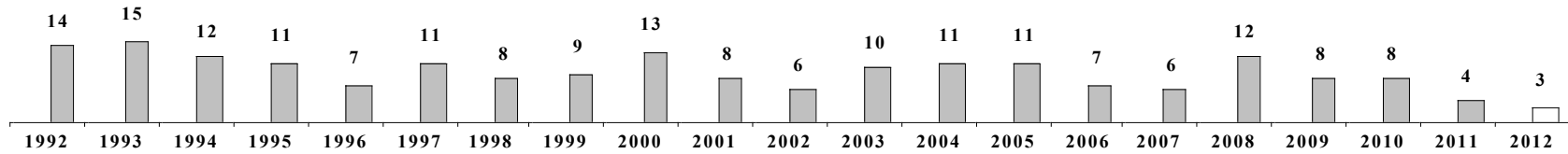
# Take Time to Review the Five SOFA Safety Advisories

Reviewing the Five SOFA Advisories is always a good idea! Doesn't take a lot of time. And it may prevent loss of life. For a complete description of each Advisory, consult the *2011 SOFA Report*, particularly Chapter 3. Available at the FRA's website, home page. Click on the SOFA icon. Navigate on the 'In this Section' tab in upper left corner: <http://www.fra.dot.gov/Pages/1781.shtml>. Below is an overview of each Advisory:

- **Advisory 1 (inexperience)**: If experienced, share your knowledge. If inexperienced, or not familiar with a site, speak up and ask. Admitting lack of knowledge makes you smart and protects you and crewmembers. On-the-job training for inexperienced employees, along with other ways to gain knowledge before harm results, are critical.
- **Advisory 2 (close/no clearance)**: For permanent, the best remedy is removal. Otherwise provide appropriate signage. Report close/no clearances through established procedures. Use a job briefing to discuss close/no clearances, both permanent and temporary. When switching, be aware of the situation and surroundings.
- **Advisory 3 (industrial hazards)**: Report through established procedures. If conditions at an industry change, make others aware. Brief employees who have never, or recently, switched the site. Employees should stop work when hazards present danger. Safety, not task completion, comes first. Safe separations should exist between railroad operations and trucks, loading/unloading devices, and non-railroad employees. Instruction about separation should be given to non-railroad employees.
- **Advisory 4 (job briefing)**: Job brief any time the nature of work changes from what was planned or anticipated. Constant monitoring of work in progress, and constant communication among all crewmembers, are two good ways to determine if a job briefing is needed. When briefing, two-way communication is essential. All crewmembers should feel free to speak and be understood. There is no 'one size fits all' for the content of a briefing. Because a job briefing to be effective must address specific tasks and local conditions. However, at a minimum, a job briefing should include: who will act, what act is to be done, where act will occur, when act will occur, and why act is being done.
- **Advisory 5 (struck by mainline train)**: Multiple warning methods should be used to alert employees (radio, horn, bell, headlight, etc.). Be aware that night and winter months present greater risks. When performing a roll-by inspection, determine a safe location to stop. Hold a job briefing before dismounting. Plan for an escape strategy if work does not go as planned. Dismount on the field side whenever possible.

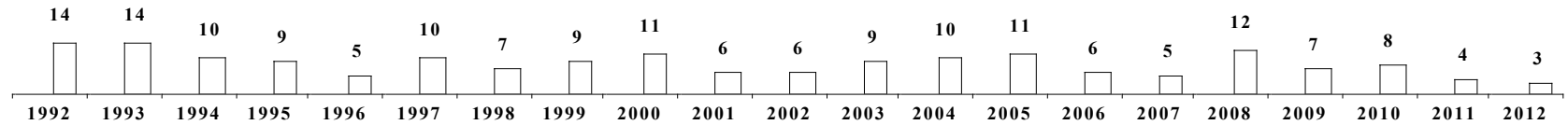
# Switching Fatality History

**194 Fatalities, by year: 1992 through 2011 full year; 2012, part year through December 05**  
**Fatalities are historically low in 2011 and 2012 (through December 05)**



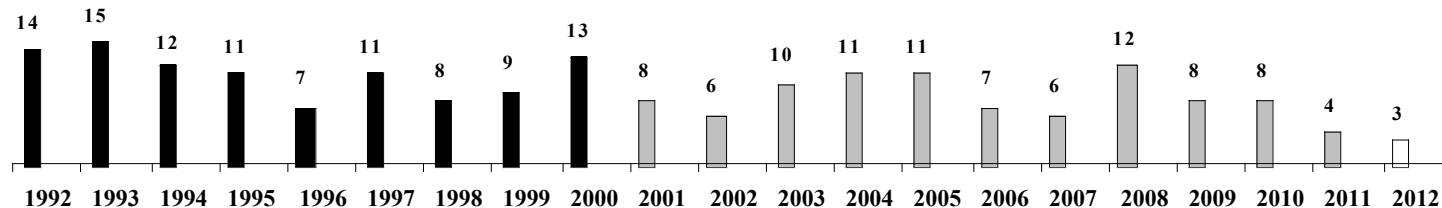
## Fatalities through December 05, by year, 1992 through 2012

Fatalities have averaged 8.4 for this approximate eleven-month period, with a range of 3 to 14 Fatalities, and the most frequent counts of 6s and 10s



## Fatalities in ‘pre-SOFA period’ compared to ‘post-SOFA period’

*pre-SOFA period* (1992-2000) is defined by the first year of cases reviewed (1992), until the release of the first SOFA report (October 1999), plus a full year for implementation. The *post-SOFA period* (2001 to present) is defined as all years and months after 2000. Defining these periods is helpful to SOFA in assessing progress

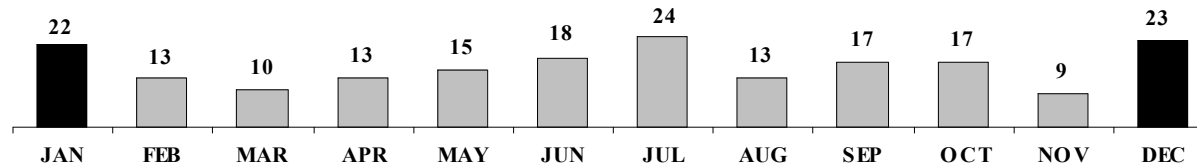


Fatalities averaged 11.1 annually in the pre-SOFA period compared to 7.8 in the post-SOFA period. Fatality counts in 2011, and the approximate first 11 months of 2012, were historically low.



# Switching Risk in Winter Months

194 Fatalities, by month: 1992 through 2011 full year; 2012, part year through December 05  
Since 1992, 45 switching Fatalities occurred in December and January



## Winter risk: related quotes from the 2011 SOFA Report

Note: The full quotation and context can be found by accessing the *2011 SOFA Report, Vol. I and II*, from the FRA's website, home page. Click on the SOFA icon. Navigate on the 'In this Section' tab in upper left corner: <http://www.fra.dot.gov/Pages/1781.shtml>.

**“...communication is essential to eliminating fatalities related to Struck by Mainline Trains. Fatalities occur when employees are unaware of risks associated with doing work along mainline track – particularly at times of darkness and during winter months.”** *Vol. I, p. xxii.* [emphasis added]

In reference to industrial track agreements: **“Maintenance of track and walkways. This includes ice and snow removal, clearing of debris alongside the track, and immediate removal of objects or debris blocking the track or walkway. This directly impacts the decision of the groundservice employee[s] to walk or ride equipment.”** *Vol. I, p. 36.* [emphasis added]

**“65% of the Struck by Mainline Trains fatalities occurred from December through February.”** *Vol. I, p. 40.* [emphasis added]

**“...outer clothing worn during winter months can restrict hearing and peripheral vision; therefore, extra caution should be exercised.”** *Vol. I, p. 40.* [emphasis added]

**“The railroad industry may want to consider additional preparation and education of the workforce on adapting to changing conditions in summer and winter.”** *Vol. I, p. 51.* [emphasis added]

**“Lack of daylight can compromise visibility and may affect the mood and alertness of the workforce.”** *Vol. II, p. H-6.* [emphasis added]

**“...ice can increase the risk of derailment, snow can reduce visibility, and mud can create unsafe footing conditions.”** *Vol. II, p. H-6.* [emphasis added]

# Switching Risk in Winter Months (continued)

## Possible Actions: Cold Winter Weather

Quoted from the *2011 SOFA Report. Vol. II, p. H-6*

“Make cold weather an issue in upcoming safety awareness campaigns. Increasing workforce awareness of this problem could be an important step in reducing fatalities in cold weather during the winter. Since many fatalities occur right at the beginning of winter, get an early start with a weather awareness campaign. Emphasize the increase risk on main track, particularly the risk of being struck by a passing train.

Include alerts about weather conditions and how to operate safely in icy conditions in safety briefings and bulletins. Ensure customers do their part to keep industrial track and walkways clear of mud, ice, and snow.

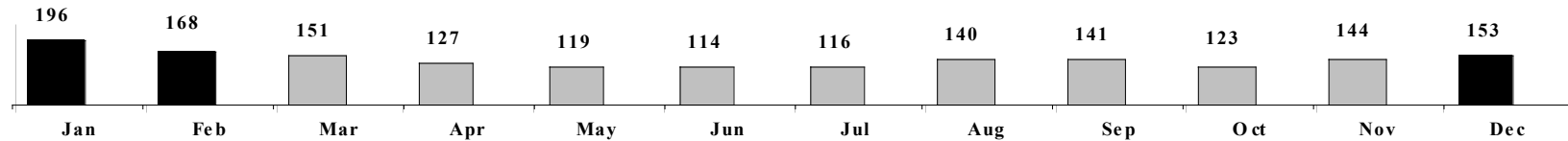
Advise management and crews to think safety first and adjust productivity expectations to suit the challenging conditions which occur in cold weather states in the winter.”

**45 December and January Fatalities, by calendar-day periods, 1992 through 2011 full year; 2012, part year through December 05**

Monthly Period	Days In Period	Fatalities		Monthly Period	Days In Period	Fatalities
Dec. 1 - Dec 10	10	7		Jan 1 – Jan 10	10	5
Dec 11 – Dec 20	10	6		Jan 11 – Jan 20	10	9
Dec 21 – Dec 31	11	10		Jan 21 – Jan 31	11	8
Monthly totals	31	23			31	22

## Switching Risk in Winter Months (continued)

**1,692 SOFA-defined Severe Injuries, by month, January 1997 through December 2012**  
**31 percent of SOFA-defined Severe Injuries occurred in December, January, and February**



**December, January, and February SOFA-defined Severe Injuries, by calendar-day periods, January 1997 through December 2012**

Month	Days In Period	Severe Injuries	Month	Days In Period	Severe Injuries	Month	Days In Period	Severe Injuries
Dec 1 - Dec 10	10	54	Jan 1 - Jan 10	10	68	Feb 1 - Feb 10	10	65
Dec 11 - Dec 20	10	61	Jan 11 - Jan 20	10	64	Feb 11 - Feb 20	10	53
Dec 21 - Dec 31	11	38	Jan 21 - Jan 31	11	64	Feb 21 - Feb 29	9	50
<b>Monthly totals</b>	<b>31</b>	<b>153</b>		<b>31</b>	<b>196</b>		<b>29</b>	<b>168</b>

**1,692 SOFA-defined Severe Injury Causes in December, January, and February vs. Other Months**  
**January 1997 through December 2012**  
**Probable cause of 'environment' increases fourfold**

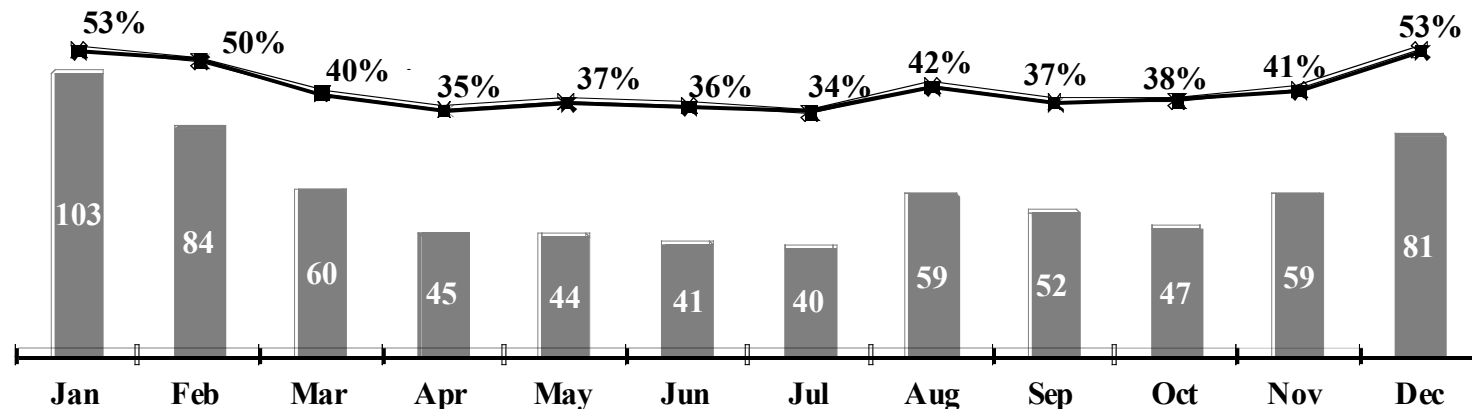
Injury Cause (based on FRA probable injury/illness circumstance codes)	Dec, Jan, Feb	Average Per Month	All Other Months	Average Per Month	Comment on Monthly Averages
<b>environmental</b>	109	36.3	83	9.2	<b>increases fourfold</b>
<b>human factors</b>	193	64.3	564	62.7	<b>increases by 2.6 percent</b>
<b>all others injury causes</b>	215	71.7	528	58.7	<b>increases by 22.1 percent</b>
<b>all SOFA-defined Severe Injuries</b>	<b>517</b>		<b>1,175</b>		

## Switching Risk in Winter Months (continued) 'slipped, fell, stumbled, etc.'

- One reason SOFA-defined Severe Injuries increase in December, January, and February is 'slipped, fell, stumbled, etc.,' as defined by five FRA event circumstance codes:

#51: Slipped, fell, stumbled, etc., due to irregular surface, e.g., depression, slope, etc.  
 #52: Slipped, fell, stumbled, etc., due to climatic condition (rain, snow, ice, etc.) [emphasis added]  
 #53: Slipped, fell, stumbled, etc., on oil, grease, other slippery substance  
 #54: Slipped, fell, stumbled, etc., due to object, e.g., ballast, spike, material, etc.  
 #70: Slipped, fell, stumbled, other

- Annually, 'slipped, fell, stumbled, etc.' comprise 42 percent of SOFA-defined Severe Injuries. In December, January, and February this type of injury increases to as much as 53 percent



**Consider giving special emphasis to this type of Severe Injury if winter weather affects operations**

## 7 SOFA Safety Discussion Items

Consider discussing when switching safety is addressed: safety briefings, meetings...even informal conversations

**Discussion item** (mentioned on *page 1*): Winter brings risk to those engaged in switching. What are these risks? Clearly, weather and extended darkness play a role. Other factors may be involved as well. What can be done to reduce risk in winter when switching? Think about winter risk in yards, on the mainline, and at industrial switching sites. What kind of special emphasis might be appropriate on your railroad to deal with winter risk?

**Discussion item**: Sixty-five (65) percent of Struck by Mainline Train Fatalities occurred in December, January, and February. Working along a mainline always has risk. In winter, this risk can increase. Darkness, and snow cover muffling sound, plays a role. Consistent methods of warning employees of on-coming movements are essential. How can special emphasis be given to this type of Fatality, which is addressed by Advisory 5. (*page 7*)

**Discussion item**: In winter months, ‘slipped, fell, stumbled, etc.,’ cause about half of SOFA-defined Severe Injuries. These injuries are almost exclusively fractures, some multiple. What type of special emphasis would help reduce this injury type? How can everyone stay on their feet during winter? (*page 12*)

**Discussion item**: What other types of casualty could winter affect? Some exposures might include extreme cold (possible frostbite), and high winds. What special emphasis is needed?

**Discussion item**: In recent years, switching Fatalities and SOFA-defined Severe Injuries have declined. What likely are the causes of these declines? How can casualty be reduced even further? (*pages 8, 14-17*)

**Discussion item**: Why does SOFA place so much emphasis on the five SOFA Advisories and Lifesavers/Recommendations...even to the point of being repetitious? Do humans need reminders from time to time? If so, what is the best way to remind employees about the Advisories and Lifesavers? SOFA believes that implementation of the Advisories and Lifesavers should occur in a positive, nurturing, and educational manner. (*page 5*)

**Discussion item**: Clearly, employees who switch have responsibility to do so safely. Additionally, what are the responsibilities of those who influence safety, be it labor, management, or government? How can these responsibilities be achieved in a cooperative manner?

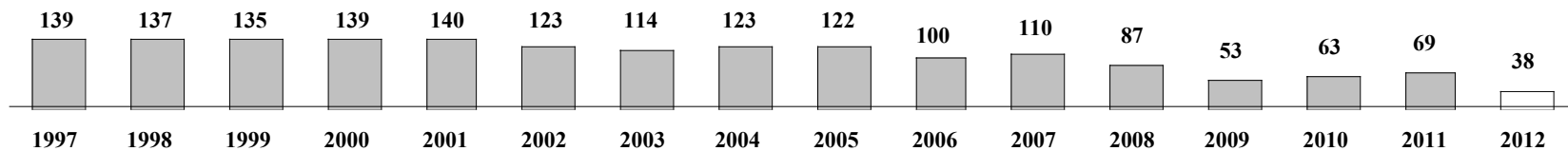
**Work Safely this Winter...Implement SOFA Advisories and Lifesavers**

# SOFA-defined Severe Injury Update

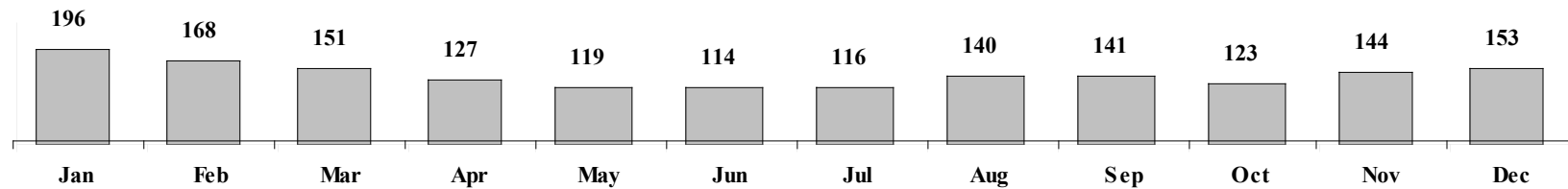
**Definition:** Based on its interests (i.e., potentially involving the same factors as Fatalities), *Severe Injuries* are defined by the SOFA Working Group as (1) potentially life threatening; (2) having a high likelihood of permanent loss of function, permanent occupational limitation, or other permanent disability; (3) likely to result in significant work restrictions; and (4) resulting from a high-energy impact to the human body. ‘Severe Injuries’ include amputation, dislocation of the neck, loss of eye, electric shock or burn, and fracture to any bone except the lower arm, fingers, foot, and toes. 1997 is the first year these Injuries to train and engine service employees can be determined as defined by the interest of the SOFA Working Group. For more information, see *Severe Injuries to Train and Engine Service Employees: Data Description and Injury Characteristics*. July 2001.

**Note:** The definition of SOFA-defined *Severe Injuries* is not to suggest that other injuries and illnesses resulting from operations are not also ‘severe’ and/or cause hardship to employees.

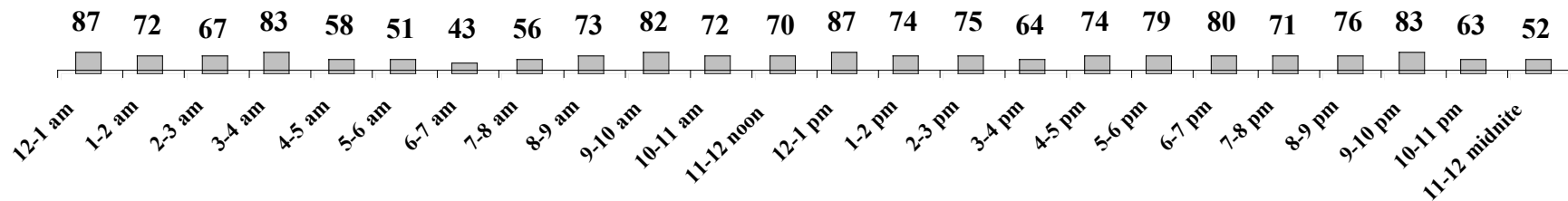
**1,692 SOFA-defined Severe Injuries, 1997 through 2011 full year; 2012, part year January through September 2012**



**1,692 SOFA-defined Severe Injuries, by month, January 1997 through September 2012**



**1,692 SOFA-defined Severe Injuries, by time-of-day, January 1997 through September 2012**



## SOFA-defined Severe Injuries, by month and year, January 1997 through September 2012

Among *SOFA Updates*, counts previously presented may change based on revisions to FRA data. The latest month available from the FRA lags the calendar month of this *Update* by three months. FRA data were accessed on November 30, 2012

### All Harm to Employees has Concern

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	totals	average
<b>JAN</b>	11	13	16	15	21	12	11	11	20	10	14	13	6	6	8	9	<b>196</b>	12.2
<b>FEB</b>	17	15	9	9	9	13	17	14	10	6	15	12	4	7	9	2	<b>168</b>	10.5
<b>MAR</b>	14	12	17	11	10	10	13	10	9	9	11	5	5	4	5	6	<b>151</b>	9.4
<b>APR</b>	8	10	6	10	12	6	9	13	10	7	8	9	5	7	5	2	<b>127</b>	7.9
<b>MAY</b>	6	12	8	8	12	14	9	6	6	8	3	7	1	7	8	4	<b>119</b>	7.4
<b>JUN</b>	9	10	8	11	8	5	10	9	7	11	5	3	6	4	2	6	<b>114</b>	7.1
<b>JUL</b>	9	14	10	8	10	7	6	10	5	12	8	1	4	4	5	3	<b>116</b>	7.2
<b>AUG</b>	13	10	11	14	8	10	7	14	10	10	13	5	4	5	5	1	<b>140</b>	8.8
<b>SEP</b>	10	11	15	10	20	12	5	4	9	6	10	12	5	3	4	5	<b>141</b>	8.8
<b>to date</b>	<b>97</b>	<b>107</b>	<b>100</b>	<b>96</b>	<b>110</b>	<b>89</b>	<b>87</b>	<b>91</b>	<b>86</b>	<b>79</b>	<b>87</b>	<b>67</b>	<b>40</b>	<b>47</b>	<b>51</b>	<b>38</b>		
<b>OCT</b>	12	12	16	10	5	11	9	7	11	5	11	4	2	4	4		<b>123</b>	8.2
<b>NOV</b>	12	9	12	11	13	14	10	10	13	8	6	8	3	6	9		<b>144</b>	9.6
<b>DEC</b>	18	9	7	22	12	9	8	15	12	8	6	8	8	6	5		<b>153</b>	10.2
<b>totals</b>	<b>139</b>	<b>137</b>	<b>135</b>	<b>139</b>	<b>140</b>	<b>123</b>	<b>114</b>	<b>123</b>	<b>122</b>	<b>100</b>	<b>110</b>	<b>87</b>	<b>53</b>	<b>63</b>	<b>69</b>		<b>1,692</b>	<b>110.3</b>

## Amputations (a type of Severe Injury), by month and year, January 1997 through September 2012

A type of SOFA-defined Severe Injury, Amputations are displayed separately because of the extreme trauma to employees engaged in switching, and the likelihood of permanent occupational and lifestyle limitations. Counts for Amputations are contained in the counts of SOFA-defined Severe Injuries (shown on previous page)

### All Harm to Employees has Concern

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	totals	average
<b>JAN</b>	1	0	2	1	0	0	2	2	2	0	1	1	1	0	2	0	<b>15</b>	0.9
<b>FEB</b>	0	1	0	1	0	2	1	2	0	2	1	0	0	1	2	0	<b>13</b>	0.8
<b>MAR</b>	3	4	3	2	1	1	3	1	2	1	0	1	1	0	0	1	<b>24</b>	1.5
<b>APR</b>	1	2	0	1	2	0	1	1	2	2	3	3	1	0	1	0	<b>20</b>	1.2
<b>MAY</b>	1	2	3	0	2	2	2	0	0	1	1	0	0	1	2	0	<b>17</b>	1.1
<b>JUN</b>	2	1	1	0	1	0	0	1	0	0	1	1	0	0	1	0	<b>9</b>	0.6
<b>JUL</b>	1	5	1	0	4	0	1	2	1	2	2	0	1	1	0	0	<b>21</b>	1.3
<b>AUG</b>	1	0	1	4	0	1	0	2	2	0	3	0	1	1	0	0	<b>16</b>	1.0
<b>SEP</b>	2	4	3	2	5	4	0	0	3	1	1	2	0	1	0	2	<b>30</b>	1.9
<b>to date</b>	<b>12</b>	<b>19</b>	<b>14</b>	<b>11</b>	<b>15</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>9</b>	<b>13</b>	<b>8</b>	<b>5</b>	<b>5</b>	<b>8</b>	<b>3</b>		
<b>OCT</b>	2	5	2	2	0	0	2	2	0	0	2	0	0	1	1		<b>19</b>	1.3
<b>NOV</b>	2	2	2	2	3	0	1	1	2	3	1	0	0	0	1		<b>20</b>	1.3
<b>DEC</b>	4	1	0	4	1	1	2	1	1	0	0	0	1	0	1		<b>17</b>	1.1
<b>totals</b>	<b>20</b>	<b>27</b>	<b>18</b>	<b>19</b>	<b>19</b>	<b>11</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>12</b>	<b>16</b>	<b>8</b>	<b>6</b>	<b>6</b>	<b>11</b>		<b>221</b>	<b>14.5</b>



# Switching Fatalities, SOFA-defined Severe Injuries, and Other Reportable Events

Source: Switching Fatalities from *SOFA Database*; all other series from FRA, accessed November 30, 2012

Note: Among *SOFA Updates*, counts previously presented may change based on revisions to FRA data

Year	SOFA Switching Fatalities	SOFA-defined Severe Injuries	Amputations (counts are included in SOFA-defined Severe Injuries)	All Reportable Employee Casualty to T&E Employees (includes Fatalities and Severe Injuries)	All Accidents	Human Factor Accidents	Highway-Rail Crossing Incidents	Trespasser Incidents (not at crossings)
1992	14	*	*	6,648	2,359	864	4,910	1,049
1993	15	*	*	5,649	2,611	865	4,892	1,032
1994	12	*	*	5,026	2,504	911	4,979	981
1995	11	*	*	4,215	2,459	944	4,633	955
1996	7	*	*	3,726	2,443	783	4,257	945
1997	11	139	20	3,489	2,397	855	3,865	**1,049
1998	8	137	27	3,642	2,575	971	3,508	**1,049
1999	9	135	18	3,835	2,768	1,031	3,489	924
2000	13	139	19	3,893	2,983	1,147	3,502	877
2001	8	140	19	3,561	3,023	1,035	3,237	915
2002	6	123	11	3,022	2,738	1,050	3,077	935
2003	10	114	15	2,935	3,019	1,230	2,977	896
2004	11	123	15	2,910	3,385	1,353	3,085	**878
2005	11	122	15	2,817	3,266	1,270	3,066	**878
2006	7	100	12	2,483	2,998	1,068	2,942	992
2007	6	110	16	2,520	2,693	1,047	2,778	877
2008	12	87	8	2,216	2,481	911	2,429	889
2009	8	53	6	1,970	1,909	655	1,932	761
2010	8	63	6	1,875	1,902	646	2,052	832
2011	4	69	11	1,724	2010	735	2,054	779
through September 2011	4	51	8	1,356	1,524	552	1,503	591
through September 2012	3	38	3	1,104	1,270	464	1,469	659
% change, 2012 vs. 2011 (through September)	--	-25.5%	--	-18.6%	-16.7%	-15.9%	-2.3%	11.5%

\*SOFA-defined Severe Injuries are defined only back to 1997

\*\*Counts happened to be identical for these successive years

# SOFA Education Section

## Some Fatality Cases Related to Winter Risk

### Education Section Purpose

SOFA places emphasis on education about **why switching Fatalities occur and how such Fatalities can be prevented**. This section presents selective Fatality cases – captured in short narratives – to emphasize particular events where employees lost their lives. SOFA believes knowledge about past cases will lead to safer operating practice – and prevent future Fatalities.

### Prepare for Case Review

Before reviewing the actual cases in detail, gain some background. Become familiar with the SOFA Advisories and Lifesavers/Recommendations. And first skim through the cases and review all applicable procedures on your railroad pertaining to the cases presented.

### Case Review

- **Recreate Event:** After reading the short case narrative, recreate the switching environment before the task began. Describe how the environment may have changed as the switching task progressed. Describe how the final event occurred. Clearly, some narratives may not contain all the needed information. You may need to make some assumptions.
- **Relate Event to Your Experience:** Relate your recreation to situations you and your crew have encountered.
- **Develop Your Reasons and Remedies:** Now, think of what may have caused the event. Develop a remedy that would have reduced risk.

### Recognition and Respect

Intent is that case-based education will prove preventive. In reviewing, please be mindful that these employees lost their lives in railroad service, and that their families will forever bear the burden.

### Information Sources

The switching Fatality narrative summaries were taken from the *SOFA Database*, which contains specifics about each case as developed by SWG in its review of on-duty fatality investigations (These investigations are required by *49 U.S.C. Section 20903*). The *2011 SOFA Report* contains information about Advisories, Lifesavers/Recommendations, and Special Switching Hazards. This and previous SOFA Reports are available at the FRA's website, home page. Click on the SOFA icon. Navigate on the 'In this Section' tab in upper left corner: <http://www.fra.dot.gov/Pages/1781.shtml>.

## Some Fatality Cases Related to Winter Risk

**January 22, 1999**

**Alexandria, NY**

**Conductor**

**Age: 45**

**A three person local switching crew was shoving a loaded covered hopper down an industrial lead. The conductor was riding on one side of the car and the brakeman was riding the other. As the car was shoved over a private crossing, the accumulation of ice and snow lifted the car off the rails and it tipped over and onto the conductor who was killed as a result of the derailment.**

### **SOFA Categories:**

**Advisory 1 (FE had 1.5 years of experience or less, or had inadequate training)**

**Special Switching Hazard: Environment**

**Special Switching Hazard: Derailment**

### **Possible Contributing Factors (PCFs):**

**H998: Employee falling from moving equipment**

**M101: Snow, ice, mud, gravel, coal, etc. on track. Build up frozen material in flangeway**

**March 05, 2008**

**Random Lake,**

**WI Freight Conductor**

**Age: 55**

**A three-person crew (engineer, conductor, and student conductor) arrived at an industrial spot where they were required to spot 2 loads. This industry had not been spotted for about a month and three inches of accumulated snow was covering packed ice on the spur track. The conductor rode the leading end of the first car adjacent to the standing train on the main track and the student conductor rode the opposite side of the same car, controlling the movement by radio. Due to the build-up of packed ice and mud in the flange-way the car derailed into the side of cars left standing on the main track, and the conductor was crushed between the cars.**

### **SOFA Categories:**

**Advisory 2 (close/no clearance)**

**Advisory 3 (industrial hazards)**

**Special Switching Hazard: Derailment**

**Special Switching Hazard: Environment**

### **Possible Contributing Factor (PCF):**

**M101: Snow, ice, mud, gravel, coal, etc. on track. One month since last spot at this industry. Ice and snow build up**

**December 29, 2009**

**Minneapolis, MN**

**RCL Operator**

**Age 44**

**A two-person RCL crew shoved five empty cars into a snow-covered industry track. Ice build-up on the track caused the lead car of the movement to derail. The RCL operator, riding the lead car and controlling the move, was crushed against the side of an industry building and fatally injured.**

**SOFA Categories:**

**Advisory 2 (close/no clearance)**

**Advisory 3 (industrial hazards)**

**Special Switching Hazard: Environment**

**Special Switching Hazard: Derailment**

**Possible Contributing Factors (PCFs):**

**M101: Snow, ice, mud, gravel, coal, etc. on track. Ice build-up on track caused derailment**

**M411: Close or no clearance. Boxcar derailed towards the building**

**January 14, 2004**

**Kankakee, IL**

**Freight Conductor**

**Age: 40**

**A two person crew was switching on the yard lead when the conductor, with 4 years experience, gave a "kick" sign via radio. The conductor wearing ice creepers pulled the pin and was struck by his own cut of cars and killed.**

**SOFA Categories:**

**Special Switching Hazard: Environment**

**Special Switching Hazard: Employee Tripping, Slipping, or Falling**

**Possible Contributing Factors (PCFs):**

**H990: Employee on or fouling track**

**H602: Switching movement, excessive speed**

**External Circumstances:**

**Snow, ice, mud, gravel, coal, etc. on track. Creepers (strap on winter boot chains) in use on dry ground**

**February 03, 2008**

**Chicago, IL**

**Freight Conductor**

**Age: 28**

A conductor and engineer were transported to their train on main track two and boarded. The ground conditions between main tracks two and one were very poor. The ground was covered by 5 inches of snow; however, the ambient lighting was good. On the south side of the standing train, the footing was good, but the lighting was poor. After receiving 3-Point Protection, the conductor dismounted the lead locomotive and proceeded to walk west, between the two main tracks, on the north side of his standing train, to untie handbrakes. An approaching westbound freight train sounded the whistle for the conductor walking in the foul and the conductor ducked between two freight cars to clear the oncoming movement. The conductor then reemerged from his safe location foul of the adjacent main track. He was struck by the westbound train and died 42 hours later.

**SOFA Category:**

Advisory 5 (struck by mainline train)

**Possible Contributing Factors (PCFs):**

H990: Employee on or fouling track

H317: Failure to communicate unsafe condition

**January 02, 2000**

**Cedar Springs, GA**

**Conductor**

**Age: 49**

A two person switching crew was in the process of switching cars in a storage yard and the conductor was riding the leading end of a cut of cars being shoved down a track. The move was taking place in dense fog and in darkness when the car he was riding collided with other cars on an adjacent track that were fouling the track he was on. The conductor was killed as a result of the collision.

**SOFA Category:**

Special Switching Hazard: Environment

**Possible Contributing Factors (PCFs):**

H101: Impairment of efficiency or judgment because of drugs or alcohol

H301: Car(s) shoved out and left out of clear

H307: Shoving movement, man on or at leading end of movement, failure to control

H605: Failure to comply with restricted speed

M104: Extreme environmental condition – dense fog

**External Circumstance:**

FE [fatality, employee] did not have a lantern and no lighting at site